

P. H. ZIMMER.

RHEOSTAT.

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925,069.

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Fig. 1

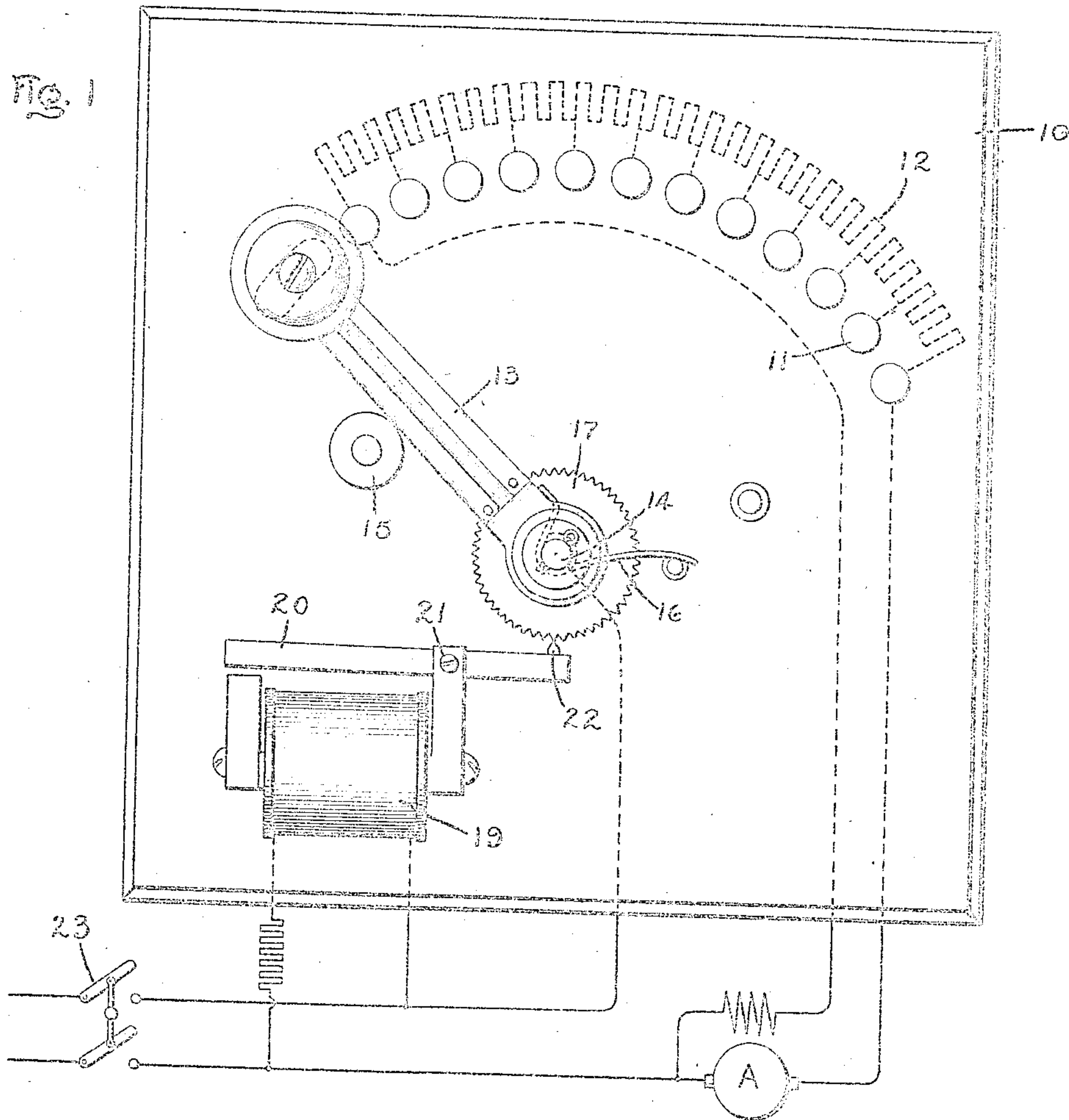
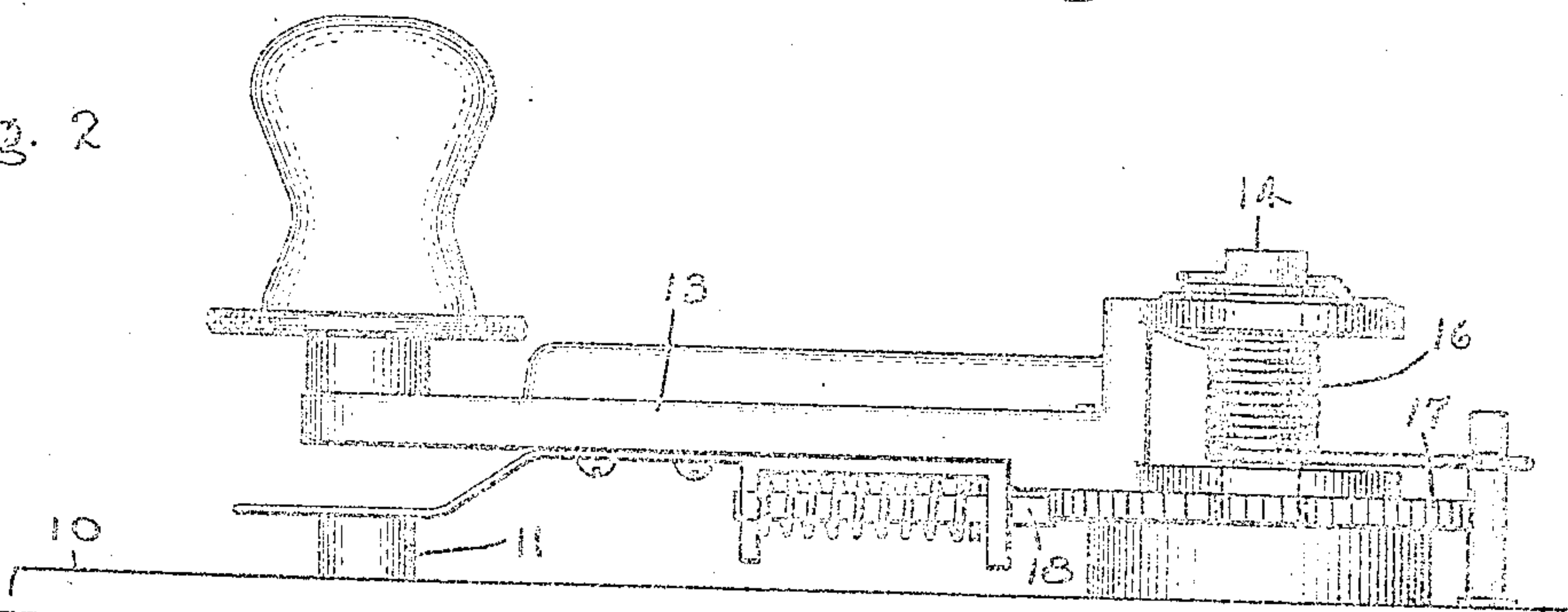


Fig. 2



WITNESSES:

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PAUL H. ZIMMER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

RHEOSTAT.

No. 925,089.

Specification of Letters Patent.

Patented June 15, 1909.

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To all whom it may concern:

Be it known that I, PAUL H. ZIMMER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

This invention relates to means for controlling electric circuits and has for its object the provision of a device of this character, which will regulate the speed of a motor in a reliable, safe and efficient manner.

One of the objects of my invention is to provide a simple and convenient speed regulating rheostat and equip the same with a no-voltage magnet whereby upon failure of voltage the controlling element will always be brought back to a protective position.

In carrying out my invention I provide in connection with a controlling arm which is spring-pressed or biased to an initial position, a member which is pivoted concentrically with said arm. This member is mounted to move independently of said arm but has an engagement therewith sufficient to overcome the spring tension on the arm so that unless the member is restrained it will move with the arm. I also provide a detent controlled by the no-voltage magnet and so arrange the parts that when the magnet is energized, the detent will engage the member and hold it so that the arm will be moved in respect to the member and will be held in any position thereby. Upon failure of voltage the arm will return to the starting position and carry the member with it.

In the accompanying drawing in which I have shown my invention embodied in concrete mechanism, Figure 1 is a plan view of the same showing the arrangement of circuits and Fig. 2 is an elevation of the operating mechanism.

Referring to the drawing, 10 is a base of some insulating material, such as slate or soapstone, provided with a series of contact studs 11 arranged in the arc of a circle and forming the terminals of resistance 12. A controlling arm 13 is pivoted at 14 and arranged so that its free end engages the studs 11 to vary the resistance. The arm is biased to an initial position against the stop 15 by means of a spring 16. A member 17 in the form of a disk, provided with ratchet teeth, is mounted concentrically with the arm 13. This ratchet disk is mounted to move freely

upon the pivot 14, and thus has a movement independent of the arm. A pawl 18 is mounted to slide in a bracket on the under side of the arm 13 and is spring-pressed into engagement with the teeth of disk 17. This causes a yielding engagement between the arm and the disk which is sufficient to overcome the tension of the spring 16 so that normally the arm and disk would move together. A no-voltage magnet 19 having an armature 20 pivoted at 21 is so arranged as to hold the disk 17 in a rigid or immovable position when the magnet is energized. This is accomplished by means of a detent consisting of a pawl or tooth 22 upon the armature 20 engaging the teeth of the disk.

The arrangement of circuits and mode of operation are as follows: When the line switch 23 is closed the no-voltage magnet 19, which is connected across the line, is energized and the detent on armature 20 engages the teeth of the ratchet disk 17 and holds it immovable. The arm will then be moved back and forth over the studs 11 so as to vary the resistance in the circuit of armature A. During this movement the arm moves over the ratchet disk 17 since the pawl 18 slips over the teeth thereof. The arm may thus be left in any desired position. Upon failure of voltage the disk will be released and the arm will return to the initial position.

While I have described my invention in connection with concrete mechanism operating in a definite manner, it should be understood that I do not limit my invention thereto except in so far as it is limited by the scope of the claims annexed hereto.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. A rheostat comprising a series of contacts, a controlling arm therefor having a bias to an initial position, a member having a frictional engagement with said arm and normally movable therewith, a no-voltage magnet, and means controlled thereby for holding said member fixed as the arm slips over the same to vary the resistance.

2. A rheostat comprising a series of contacts, a pivoted controlling arm therefor having a bias to an initial position, a movable member mounted concentrically of said arm and having a ratchet engagement therewith, a no-voltage magnet, and means controlled thereby for holding said member

fixed as the arm ratchets over the same to vary the resistance.

3. A rheostat comprising a series of contacts, a pivoted controlling arm therefor
5 having a bias to an initial position, a ratchet disk mounted concentrically and movable independently of said arm, a pawl on the arm engaging said disk, a no-voltage magnet, and a detent arranged to hold said disk fixed
10 when said magnet is energized.

4. A rheostat comprising a series of contacts, a controlling arm therefor having a bias to an initial position, a member mounted for movement independently of said arm
15 but normally movable therewith, a no-voltage magnet, and means controlled thereby for holding said member fixed as the arm

is moved with reference thereto and held in any position thereby.

5. A rheostat comprising a series of contacts, a controlling arm therefor having a bias to an initial position, a member mounted independently of said arm and having a yielding engagement therewith sufficient to overcome the bias, a no-voltage magnet, and
25 means controlled thereby for holding said member fixed as the arm is moved with reference thereto.

In witness whereof, I have hereunto set my hand this third day of April, 1908.

PAUL H. ZIMMER.

Witnesses:

HELEN ORFORD,
FRANK J. DORE.